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ABSTRACT

Technological and vocational education (TVE) in Taiwan is mainly provided at three levels: senior vocational schools (SVSs), junior colleges (JCs), and institutes/universities of technology (IT/UTs). These three levels respectively aim to develop entry-level, mid-level, and high-level technical or managerial personnel. The national curriculum standards of SVSs and JCs are promulgated by the Ministry of Education for the purposes of school curriculum planning, textbook compilation, and entrance examinations. TVE curriculum development has exhibited the following emerging trends: aiming to incorporate job training with advanced further study; a tendency toward despecialization; an increase in academic coursework; reliance on new technology to modernize subject matter; an emphasis on feedback mechanisms for curriculum development; and promotion of school-based curriculum development. The following new directions for TVE curriculum development have been suggested: more cooperation among TVE users and providers; more integration within TVE subfields and articulation among TVE levels; more experiential learning and flexibility in curriculum structure; and development of skill standards and an assessment process to lead and demonstrate curricular quality and accountability. (Author/YLB)

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New Trends in Curriculum Development in Technological and Vocational Education in Taiwan

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Abstract

Technological and vocational education (TVE) in Taiwan is mainly provided at three levels: senior vocational schools (SVS's), junior colleges (JC's) and institutes/universities of technology (IT's/UT's).These three levels of TVE institutes respectively aim to develop entry-level, mid-level, and high-level technical or managerial personnel. The national curriculum standards of SVS's and JC's are promulgated by the Ministry of Education (MOE) for the basis of school curriculum planning, textbook compilation, and entrance examinations. This paper mainly presents the following six trends in the development of SVS and JC curriculum standards: (1) aiming to incorporate job training with advanced further study; (2) a tendency toward despecialization; (3) an increase in academic coursework; (4) reliance on new technology to modernize subject matter; (5) an emphasis on feedback mechanisms for curriculum development; and (6) promotion of school-based curriculum development (SBCD). Finally, the following new directions for TVE curriculum development are suggested: (1) more cooperation among TVE users and providers; (2) more integration within TVE subfields and articulation among TVE levels; (3) more experiential learning and flexibility in curriculum structure; and (4) development of skill standards and an assessment process to lead and demonstrate curricular quality and accountability.

New Trends in Curriculum Development in Technological and Vocational Education in Taiwan

Technological and vocational education (TVE) in Taiwan is mainly provided at the following three levels: senior vocational schools (SVS's), junior colleges (JC's) and institutes/universities of technology (IT's/UT's)[1]. This is a through TVE system which stands a good chance of reflecting the characteristics of TVE such as reliance on cooperative and experiential methods. In the 1996-97 school year[2], 66.1% of total students at the upper-secondary level were in SVS's and the lower three grades of five-year JS's. This indicates that the through TVE system (SVS-JC-IT/UT) is a main avenue, parallel to the general education system (SHS-university/college), for junior high school graduates to take further study. In the 1996-97 school year, the overall numbers of TVE institutes were 204 SVS's, 70 JC's and 10 IT's.

The following should be noted: (1) At the lower-secondary level, a project is currently under way to provide junior high school students who are not academically-oriented with technical programs. (2) At the upper-secondary level, some senior high schools (SHS's) also provide vocational programs, and an experimental comprehensive high school program, which includes vocational programs, has been conducted since the 1996-97 school year. (3) At the tertiary level, some comprehensive universities also provide technological programs, which mainly recruit graduates from TVE institutes.

The three levels of TVE institutes respectively aim to develop entry-level, mid-level, and high-level technical or managerial personnel (Ministry of Education, 1996). A baccalaureate is conferred to the graduates of undergraduate programs in IT's/UT's. Master's and doctoral programs are available in some IT's/UT's. In order to fulfill their aims, TVE programs and curricula must be developed appropriately. The purpose of this paper is to present the status quo and the emerging trends (i.e., developmental directions) in TVE curriculum development in Taiwan.

An Explanation of Current TVE Curriculum Development

In Taiwan, curricula for elementary schools, junior high schools, senior high schools, and SVS's as well as JC's are standardized and promulgated by the Ministry of Education (MOE). These national curriculum standards are utilized as the basis of school curriculum planning and instructional design, as guidelines for textbooks compilation, and to provide the scope for entrance examinations for further study. Revised approximately every 10 years, curriculum standards for all levels of schooling are considered as one of the quality assurance mechanisms implemented by educational authorities. Administered by the MOE, the generic steps employed to revise the curriculum standards for SVS's and JC's are as follows (Lee & Hwang, 1996):

1. draft a curriculum revision proposal;
2. organize a curriculum revision committee, normally consisting of TVE administrators, teacher educators, school staff, and curriculum specialists;
3. construct a research and design task force, not only in charge of drafting revision principles, a curriculum standard framework, revision model, etc., but also offering consultative services;
4. group curriculum drafting task forces, which include general principles task forces, in charge of drafting instructional goals, courses, the sequence offered and teaching hours for each TVE program, and
5. draft a syllabus for each course;
6. review and refine; and
7. promulgate and implement.

Funded yearly by the MOE, five TVE curriculum development centers, affiliated with three UT's, an institute of nursing, and a comprehensive university have been established to be, respectively, in charge of curriculum development for the following TVE subfields: industry, commerce, home economics and agriculture, nursing, and marine studies. The above steps 4 to 6 are mainly conducted in these curriculum development centers, while steps 1 to 3 and 7 are primarily managed by the MOE.

At present, SVS curriculum standards are under revision and will possibly be promulgated in 1997 or soon after, and go into effect in the 1999-2000 school year. Current program-specified JC curriculum standards[3] were promulgated in 1993 or 1994 and went into effect in the 1995-96 school year. Regarding IT/UT curricula, each IT/UT designs its own curricula according to its particular features. Graduation from an IT or a UT normally requires a minimum of 148 course credits in four-year programs and a minimum of 72 course credits in two-year programs. Since IT/UT curriculum development is fully school-based, the following presentation of trends in TVE curriculum development will be focused on SVS and JC curriculum standards.

Emerging Trends in TVE Curriculum Development

Curricula in schools are supported by three types of interconnected justification: individual development, social adaptation, and academic rationalism. For years, calls for educational reform have been increasingly raised in Taiwan (Lee, 1996). As a result, some major curriculum reform measures have been implemented. The confluence of these measures is to promote student development on the basis of their own individual differences (Lee, 1997). That is, individual development has been highly valued (see Figure 1). Affected by this increasing value and the context of technological, social, economic and educational change, TVE curriculum development has exhibited the following emerging trends:

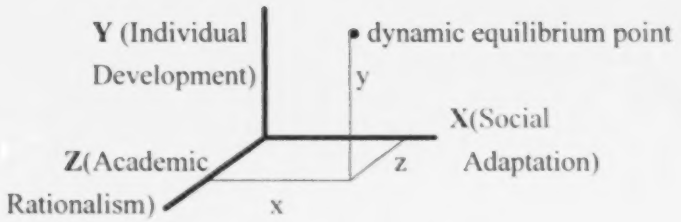

Figure 1. Individual development has been highly valued (y>x>z) in an educational context.

1. Aiming to incorporate job training with advanced further study

Each level of TVE education was considered as a terminal level from which graduates were expected to go directly into the workplace. Thus, TVE curriculum goals were aimed at job-training. Because more and more TVE students desire to receive higher education, the number of IT's/UT's and related programs have been growing, and our society has been changed into a lifelong-learning society, the TVE curriculum has inevitably begun to aim at both job-training and further-study.

2. A tendency toward despecialization

Since the workplace increasingly needs a versatile workforce and TVE programs at the tertiary level are often split between broadly based technological or engineering streams, TVE curricula have shown a tendency toward despecialization (i.e., reformulating programs around a core of common knowledge and skills shared by several occupations).

3. An increase in academic coursework

New TVE curriculum standards pay much attention to basic skills such as communication, computation, higher-order thinking, in terms of increasing academic coursework such as languages, math, and sciences. The very notion of this trend is to provide students with more broadly fundamental training for the needs of both the workplace and further studies.

4. Reliance on new technology to modernize subject matter

To reflect the reality that this is a cybernetic/technological society, new subject matter or contents around technology (e.g., 3C's--computerized computing, communication and control) has/have obviously been infused into or integrated with new TVE curricula.

5. An emphasis on feedback mechanisms for curriculum development

In order to eventually reach agreement between TVE graduate employers and TVE providers on the contents of curricula, some feedback mechanisms for curriculum development such as auditing have been emphasized.

6. Promotion of school-based curriculum development (SBCD)

TVE institutes have been greatly empowered to participate in the two tiers of curriculum decision-making, shown in Figure 2, to fit their own school situations and the needs of their students.

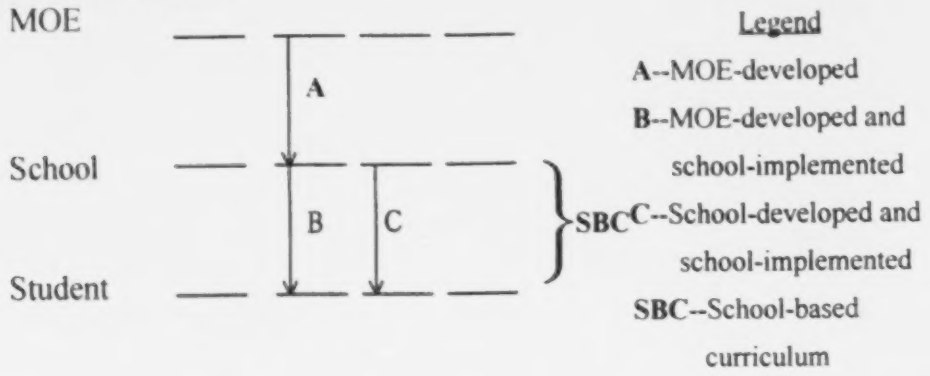

Figure 2. The two tiers of curriculum decision-making.

Considered as developmental directions, trends have two interrelated aspects--factual (i.e., "to be") and ideal (i.e., "ought to be") aspects. Although there have been the above six emerging trends in TVE curriculum development, the authors suggest the following new directions for TVE curriculum development:

1. More cooperation among TVE users and providers

TVE curricula must be customer-driven. Thus, it may well be that significant dimensions of TVE content are best learned from both the "users" of TVE (e.g., employers of graduates, family, community) and the "providers" of TVE (i.e., TVE institutes). On the other hand, partnership between users and providers must be enriched to promote TVE students' school-based learning, work-based learning and school-work linkage.

2. More integration within TVE subfields and articulation among TVE levels

The TVE system in Taiwan crosses more than seven subfields (e.g., industry, commerce, agriculture) in both the upper-secondary and the tertiary levels. Both the common and unique features of curricula in TVE subfields should be used to reinforce one another and students need to be able to progress in an orderly manner, experiencing neither gaps nor unnecessary duplication among TVE levels (Copa & Bentley, 1992).

3. More experiential learning and flexibility in curriculum structure

The TVE curriculum needs to ensure that its delivery systems focus on students' experiential learning and its structure demonstrates flexibility in such ways as modules within courses.

4. Development of skill standards and an assessment process to lead and demonstrate curricular quality and accountability.

Industry-based skill standards and other mechanisms, such as local advisory committees, should be used as means to ensure up-to-date curriculum revision. In addition, a very focused assessment process, in line with skill standards, should be developed to demonstrate TVE curricular quality.

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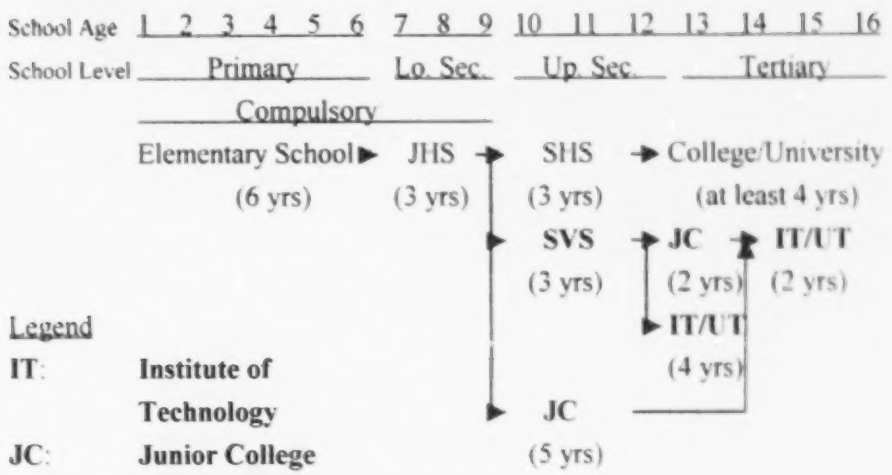
Footnotes

[1]The school system of Taiwan is illustrated as follows:


School Age 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
School Level Primary Lo. Sec. Up. Sec. Tertiary
Compulsory
Elementary School (6 yrs)
JHS (3 yrs)
SHS (3 yrs)
College/University (at least 4 yrs)
SVS (3 yrs)
JC (2 yrs)
IT/UT (2 yrs)
IT/UT (4 yrs)
JC (5 yrs)

Legend

IT:	**Institute of Technology**
JC:	**Junior College**
JHS:	Junior High School
Lo. Sec.:	Lower Secondary
SHS:	Senior High School
SVS:	**Senior Vocational School**
Up. Sec.:	Upper Secondary
UT:	**University of Technology**
yrs:	years
→:	flow

Note

TVE institutes are typed in **boldface**.

[2]Each school year in Taiwan lasts from August 1 to July 31.

[3]Junior-college curriculum standards are called course tables and syllabuses.

台灣技職教育課程發展的新趨勢

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發表於APEC教育論壇一九九七台北研討會
二十一世紀的挑戰－
技職教育課程與教學
台北，台灣，1997年11月2～6日

摘 要

台灣的技職教育主要在下列三個教育階段提供：高級職業學校（簡稱高職）、專科學校（簡稱專校）和技術學院／科技大學（簡稱技院／科大）。這三層次的技職校院分別以培育基層、中級和高級技術或管理人才爲目標。高職和專校的國定課程標準係由教育部訂頒以作爲學校課程規劃、教科書編寫和招生考試命題的基準。本文主要指陳高職和專校的課程標準發展，有下列六項新趨勢：⑴目標兼顧就業準備與進修發展，⑵課程趨向群集統整，⑶增大學術科目比重，⑷借重科技革新學科內容，⑸重視課程發展的回饋機轉，以及⑹促進學校本位的課程發展。最後，並提陳下列有待努力的新方向：⑴加強技職教育使用者和供應者之間的合作，⑵加強類科間的統合及階段間的銜接，⑶加強學生的體驗學習及課程結構的彈性，以及⑷重視能力標準及評鑑程序的發展以引領及衡鑑課程品質和績效。

台灣技職教育課程發展的新趨勢

台灣的技職教育主要在下列三個教育階段提供：高級職業學校（以下簡稱高職）、專科學校（以下簡稱專校）和技術學院／科技大學（以下簡稱技院／科大）（註1）。這種體系因完整一貫而較有可能反映技職教育重視合作與體驗等方面的特色。在1996-97學年度（註2），高級中等學校階段的學生總人數中有66.1％在高職和五專前三年。這顯示和普通教育體系（高中－大學校院）並行的一貫技職教育體系（高職－專校－技院／科大）已是國中畢業生升學的主要進路之一。在1996-97學年度，技職校院共有204所高職、70所專校和10所技院。

值得注意的是：⑴在初級中等教育階段，有一項專案計畫正在提供非學術取向的國中學生技藝教育；⑵在高級中等教育階段，某些高中亦開設職業類科，而自1996-97學年度起試辦的綜合高中亦開設有職業學程；⑶在大專教育階段，某些綜合大學亦開設主要招收技職校院畢業生的技術學院類系組。

上述高職、專校和技院／科大三層次的技職校院分別以培育基層、中級和高級技術或管理人才爲目標(Ministry of Education, 1996)。技院／科大的大學部授與畢業生學士學位，某些技院／科大則開設有碩士班和博士班。爲了達致預設目標，技職教育類科及課程必須適切發展。本文的目的即在指陳台灣技職教育課程發展的現況與新趨勢（即發展方向）。

壹、技職教育課程發展的現況說明

台灣國小、國中、高中、高職和專校課程係由教育部制訂標準並公布施行。這種國定課程標準旨在作爲學校課程劃和教學設計的基準、教科書編寫的指引、以及升學入學考試命題的範圍。課程標準大約每十年修訂一次，並被視爲是教育當局用以確保學校教育品質的機轉之一。教育部主導下的高職和專校課程標準修訂之一般步驟如下(Lee &Hwang, 1996)：

1. 擬訂課程標準修訂計畫。
2. 組成課程標準修訂委員會－通常包含技職教育行政人員、學科專家（師資教育人員、學校教師代表）和課程專家。
3. 組成研究設計小組－負責起草修訂原則、課程標準基本架構和修訂模式等。
4. 組成總綱及各類科修訂小組－負責起草各類科教學目標、科目及時數等。
5. 擬訂各科目教學大綱。
6. 審查與修正。
7. 公布與實施。

目前有五個附設於三所科大、一所護理學院和一所綜合大學的五個技職教育課程發展中心，在教育部逐年經費補助下，分別負責下列五個技職類別的課程發展：工業、商業、家政及農業、護理和海事水產。上述步驟4至6主要由這些中心執行，步驟1至3及7則由教育部綜理。

目前，高職課程標準正在修訂中，可能在1997年或稍後公布，並在1999-2000學年度實施。現行專校各科別課程標準（註3）則係公布於

1993 或 1994 年，並自 1995-96 學年度實施。至於技院／科大課程方面，係由各技院／科大依其特色設計課程。四年制的技院／科大畢業最低要求學分通常爲 148 學分，二年制則爲 72 學分。由於技院／科大的課程發展全屬學校本位，所以以下有關技職教育課程發展的陳述將著重在高職和專校課程標準。

貳、技職教育課程發展的新趨勢

學校課程常有三個相互關連的價值考量層面：個人發展、社會調適和學術理性。這幾年來，教育改革的訴求高漲(Lee, 1996)。因此，實施了一些課程改革的措施，這些措施的交集是重視學生個別差異促進學生發展(Lee, 1997)。亦即，個人發展被高度評價（見圖 1）。受到此種價值以及科技、社會、經濟和教育變遷等環境的影響，技職教育課程發展有下列新趨勢：

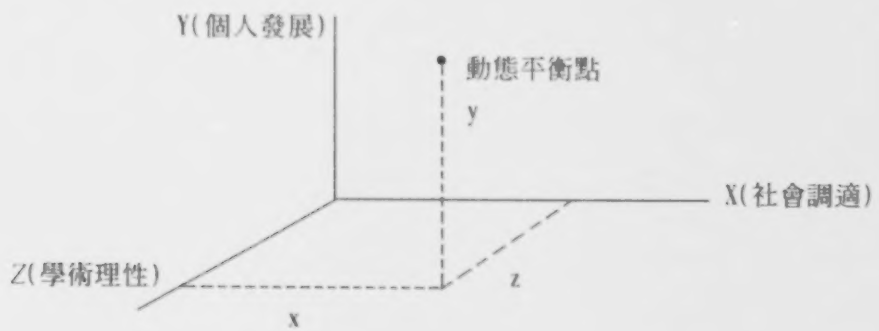

圖 1　個人發展在教育環境中被高度評價 (y>x>z)

一、目標兼顧就業準備與進修發展

以往各級技職教育被視爲終結教育，其校院學生被期望畢業即直接就業。因此，技職教育課程目標以就業準備爲主。但愈來有愈多的技職校院學生想接受高等教育，技院／科大及相關類系組的數量愈來愈多，且台灣的社會已成終生學習的社會，技職教育課程乃因而急轉爲兼顧就業準備與進修發展。

二、課程趨向群集統整

由於工作職場愈來愈需要有變通能力的人才，又大專階段的技職教育常就廣域的科技或工程類群分類、科、組，所以技職教育課程趨向群集統整（即就數個職類的共同知能作組合）。

三、增大學術科目比重

新課程標準透過增大語文、數學和科學等學術科目的比重，強調溝通、計算、較高層次思考等基本能力。這種趨勢的想法是要提供學生就業及進修所需的廣博基礎訓練。

四、借重新科技革新學科內容

爲了反映當今社會是電腦化或科技化的社會，新課程明顯地開設或融入了和科技（如電腦化運算、傳播及控制的3C）有關的學科或內容。

五、重視課程發展的回饋機轉

爲了使技職校院畢業生的僱主和技職校院在課程內容方面達成共識，一些課程發展的回饋機轉（如公聽會）常被重用。

六、促進學校本位的課程發展

技職校院被高度授權參與圖2所示的二階課程決定，以配合其學校情境和學生需求。

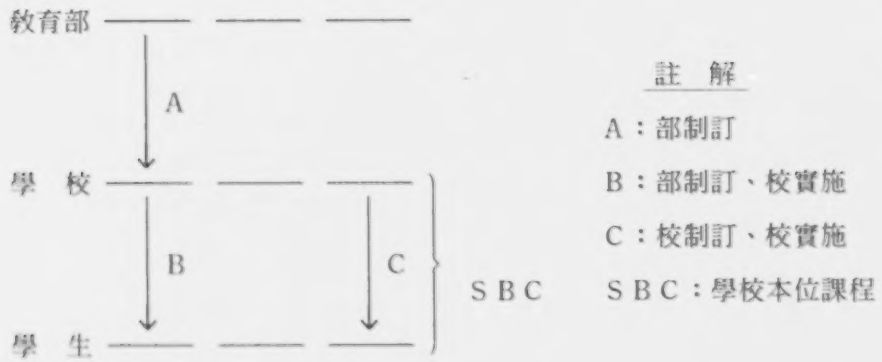

圖2 二階式課程決定

趨勢被看成發展方向時，有相互關連的兩個層面：事實（即實然）面和理想（即應然）面。雖然技職教育課程發展有上述六項新趨勢，但作者們進一步提陳下列四項有待努力的新方向：

一、加強技職教育使用者和供應者之間的合作

技職教育課程必須顧客導向。因此技職教育內容的重要向度宜廣徵技職教育使用者（如畢業生的僱主、家人、社區）和供應者（即技職校院）的意見。另一方面，使用者和供應者之間夥伴關係的建立應予加強，以促進學生學校本位的學習、職場本位的學習和學校－職場（即產－學）之間的聯繫。

二、加強技職教育類別間的統合及層級間的銜接

技職教育系統跨越七個以上類別（如工業、商業、農業）和高級中等及大專教育兩階段。類科間課程的共同點與特異點應被用來互濟互用，學生在各技職教育階段間需能循序進展，沒有跳脫及過度重覆的現象。

三、加強學生的體驗學習與課程結構的彈性

技職教育課程需確保其傳授系統著重學生的體驗學習；且其結構展現彈性（如科目模組化）。

四、需發展能力標準和評鑑程序以引領和衡鑑課程的品質與績效

業界本位的能力標準和其他機轉（如地區顧問委員會）應被運用以確保課程修訂切合時需。此外，對準能力標準的適切評鑑程序應被發展出來衡鑑技職教育課程的品質。

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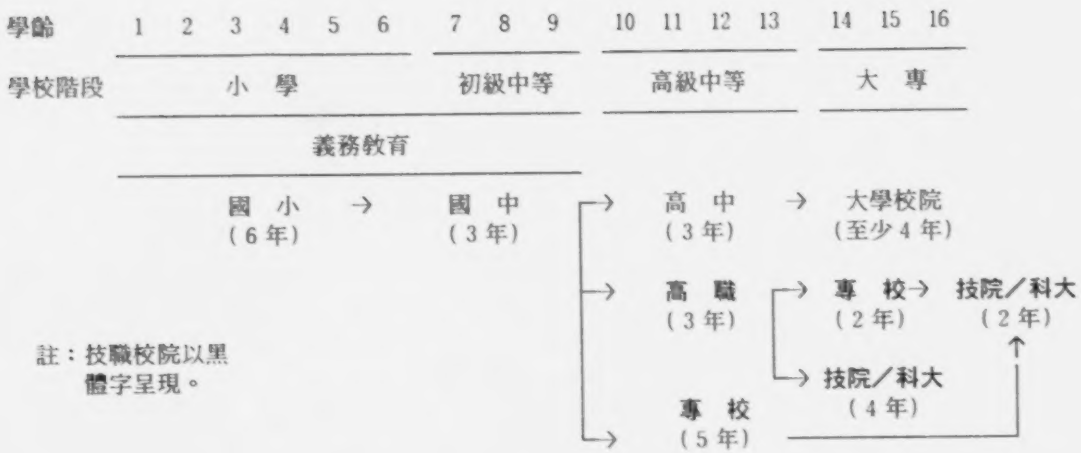
附　註

1. 台灣的學制可圖示如下：



註：技職校院以黑體字呈現。

2. 台灣的每學年起自8月1日，止於7月31日。

3. 專校課程標準名稱爲「科目表暨教材大綱」。